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RE-ANALYSIS OF STRONG'S INTEREST DATA FROM MEDICAL SPECIALISTS.

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A RETESTING WAS MADE OF THE RELATIONSHIP BETWEEN MEASURED INTERESTS AND THE SELECTION OF A MEDICAL SPECIALTY. SPECIFICALLY, THE RESEARCH REPORTED HERE ATTEMPTED TO DETERMINE WHY THE STRONG VOCATIONAL INTEREST BLANK (SVIB) AND THE MEDICAL SPECIALIST PREFERENCE BLANK (MSPB) SCALES FAIL TO PREDICT EVENTUAL MEDICAL SPECIALTY. ALL OF THE ANALYSES OF AN EARLIER STUDY (STRONG AND TUCKER, 1952) WERE REDONE. ONE CONCLUSION WAS FOUND TO BE IDENTICAL TO AN ORIGINAL STRONG-TUCKER FINDING, NAMELY, THAT THE SCALES COULD NOT BE USED TO PREDICT EVENTUAL MEDICAL SPECIALTY. WHILE THE MEDICAL SPECIALIST SCALE WAS FOUND TO BE VALID AMONG SPECIALISTS WHO HAD ALREADY CHOSEN A CAREER, IT WAS SUGGESTED THAT THE SCALE NOT BE USED FOR COUNSELING. (GD)

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Center for Interest Measurement Research

Student Counseling Bureau

Office of the Dean of Students

University of Minnesota

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Re-Analysis of Strong's Interest Data from Medical Specialists

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In the late 1940's, E. K. Strong, Jr. and Anthony Tucker, working at Stanford University, developed a set of supplementary scoring scales for the Strong Vocational Interest Blank (SVIB) designed specifically for medical specialists. These scales were based on the SVIB and a supplementary inventory called the Medical Specialist Preference Blank (MSPB). The latter inventory included items specifically oriented toward medical activities as Strong and Tucker had found that the item pool of the SVIB alone did not have enough items to discriminate well between medical specialties. Working with these two inventories, using samples drawn from four specialties (pathology, internal medicine, psychiatry, and surgery), Strong and Tucker devised scales to reflect the characteristic interests of each of these specialty groups when compared with a group of doctors-in-general. The scales were successfully cross-validated and held considerable promise for helping medical students with their post-medical school career plans. A complete report of this project can be found in Strong and Tucker (1952).

In 1951 Strong and Tucker administered their inventories to a sample of 781 medical school seniors from 14 medical schools. These inventories were not scored then but were filed away for later reference. Ten years later, in 1960, Strong and Tucker studied these students to

determine which specialty they had entered and thus to check the predictive validity of the Medical Specialist Scales. Their report on this follow-up (Strong and Tucker, 1962) indicated that the Specialist Scales did not accurately predict eventual specialty, with the exception of the Psychiatrist Scale. Consequently, they recommended that the other scales be dropped and that the Psychiatrist Scale be included on the regular profile of the SVIB.

The failure of these scales to predict was disappointing as this was an excellent study of the predictive validity of interest inventory scales. The original criterion groups were large and well-selected, the scales were cross-validated, and the follow-up sample provided an unusual opportunity to test the long-term predictive validity of the scales. Under these circumstances, the failure of the scales was perplexing.

RE-ANALYSIS OF THE STRONG-TUCKER STUDY

The research reported here was an attempt to determine what went wrong. In a brief review of the Strong-Tucker analyses, several errors were uncovered. They were minor, of the sort that would turn up in an extensive examination of the records of any large scale study, and none of them were crucial. Still, it was possible that they cumulatively would have had some significant impact on the data. To check this possibility, all of the analyses from the earlier study were redone. The inventories were rescored, the item analyses were recomputed, the validation and cross-validation calculations were redone, and the statistics from the 10 year follow-up were rechecked. When all of this had been accomplished, the final conclusions were identical to the original Strong-Tucker findings: the scales simply didn't predict.

DEVELOPMENT OF NEW MEDICAL SPECIALIST SCALES

The next step was to remake the Medical Specialist Scales, using more recently developed means of scale construction, specifically, those techniques used in the recent revision of the SVIB (Campbell, 1966). Essentially what was done was to identify items with specified percent differences (usually 15 per cent or greater) in response to the items of the SVIB and the MSPB between the specialist group and doctors-in-general. These items were then used in the scoring scale for that specialty.

MEDICAL SPECIALISTS SAMPLES

The samples used to develop the scales were those collected by Strong and Tucker in the 1940s and 1950s. All of the specialists were diplomates of their respective American Boards, and the sampling was done to favor the younger specialists. More information can be found in Strong and Tucker (1952).

The item analysis included whatever inventories were available (excluding the cross-validation samples.) Some men completed only the SVIB, some completed only the MSPB, while others completed both; this meant that, within the criterion groups, there was not complete overlap in the SVIB and MSPB samples.

The cross-validation samples included those men who had returned the blanks after the scale development phase had been completed.

Insert Table 1 about here

Table 1 reports, for each specialty scale, the number of subjects used for item analysis purposes, the minimum per cent difference scored, and the number of items on each scale.

VALIDITY DATA

Table 2 presents the validation and cross-validation data for the newly developed scales. For the criterion group, raw score means and standard deviations are presented; for the other samples, standard scores are used. These standard scores are based on a linear transformation of the criterion group raw scores, so that the criterion group has a standard score mean of 50 and S.D. of 10 on its own scale, similar to the other occupational scales on the SVIB. (The transformation formula can be found in the SVIB Manual.) These scores provide a ready reference to the scores of the criterion group, and permit comparisons across scales.

Insert Table 2 about here

The Ns in Table 2 are the number of men in each sample who completed both the SVIB and MSPB.

The percent overlap provides a summary validity statistic, showing the percent of scores in one distribution that can be matched by scores in the other. The Specialist Scales did a respectable job of separating the criterion groups from the reference group of doctors-in-general; although the overlaps were higher than among the usual SVIB occupational scales, and though there was some noticeable shrinkage among the cross-validation samples, there was always at least one standard deviation difference in mean scores, usually about one and one-half S.D.s difference, between the groups.

The cross-validation here was more stringent than usual, as cross-validation samples were available for both the criterion and reference

(doctors-in-general) groups--usually only the criterion group has a cross-validation sample. However, this benefit must be balanced off against the relatively smaller size of the reference group. The Men-in-General sample used for the regular SVIB scales contained 500 men, the doctors-in-general sample used here had only 214. As sample size is related to the stability of item statistics, it is more important to provide a cross-validation sample when smaller samples are used.

The validation and cross-validation statistics for the Specialization Level Scale are presented in Table 3. This scale does a less effective job of separation, which would be expected from the item statistics presented in Table 1; there were relatively fewer items showing large differences between the criterion and reference group for this scale. The Specialization Level Scale provides about one standard deviation separation between the specialist groups and the doctors-in-general with the exception of the surgeons where there was only about one-half S.D. separation, both in the validation and cross-validation samples. The scale seems adequate but not impressive.

Insert Table 3 about here

The Medical Specialist Scales should not only discriminate between the appropriate specialist group and doctors-in-general, they should also discriminate between different groups of specialists. Table 4 contains the necessary data on that point; the scales did indeed separate the specialists from each other and the separations held up well on cross-validation as all of the specialist groups scored at least one-half

S.D. higher on their own scale than on any other scale.

Insert Table 4 about here

PREDICTIVE VALIDITY

The next step in this research was to test the predictive validity of the scales, using the 10 year follow-up sample collected by Strong and Tucker. These students, from the 14 medical schools indicated in Table 5, were tested as seniors in the spring of 1951.

Insert Table 5 about here

Details of the data collection are no longer available, but apparently it was done with the cooperation of the medical schools. The old correspondence files indicate that the method of administration differed from school to school. In some schools, for example, it was done on a voluntary basis, in others it was included as part of the daily schedule. As Table 5 shows, data were collected from about 70 per cent of the individuals in these classes; considering the hectic life of medical school seniors, this represents commendable coverage by these schools.

The current specialties of 726 of these 781 were determined from the current directory of the American Medical Association; each individual was categorized appropriately, and the sub-groups were scored on the Medical Specialist Scales. Means for each group on all scales are reported in the last five columns of Table 6; again, they indicate that the scales were not accurate predictors of specialty engaged in, certainly not good

enough to warrant using them in counseling medical school students.

Insert Table 6 about here

The data did show some lawful relationships. The surgeons scored higher on the Surgeon Scale than did any of the other specialties, but their score (35) was considerably below the criterion group (who scored 50) and lower than their score (36) on the Psychiatrist Scale. The psychiatrists scored highest on the Psychiatrist Scale (47) but they also scored higher on the Internist Scale than the internists (43 vs 40), and almost as high on the Pathologist Scale as the pathologists (32 vs 33).

Other quandries can be identified in Table 6 and, overall, the results were confusing.

On the regular SVIB scales, the results were more straightforward. All of these medical groups scored fairly high on the Physician Scale, in the lower and mid 40s. On the SVIB Specialization Level Scale (which differs from the one discussed earlier by being based on the SVIB items only) the general practitioners scored lowest, the academicians highest. The SVIB Academic Achievement Scale (AACH) distributed the groups as would be expected. All of them averaged above 50 (the scale is normed so that the "average" college graduate scores about 50), with again the general practitioners scoring lowest, the academicians highest. And on the SVIB Psychiatrist Scale, the psychiatrists scored highest.

The regular SVIB scales seem to be performing properly; why didn't the Medical Specialist Scales do as well?

Strong and Tucker thought that the great changes that had taken place in the medical profession during the 1950s was probably the explanation. The per cent of medical students going on to specialties was approximately 25 per cent when the earlier testing of the criterion groups was done, but had jumped to about 75 per cent when the follow-up was carried out. Medical schools had expanded, budgets had increased, and there had been a tremendous increase in the amount of research funds available, mainly from Federal sources. Such changes could affect prediction. This conclusion is difficult to accept however, for other research has shown considerable stability of interests over time within occupations, including some occupations which appear to be changing as radically as medicine (Campbell, 1965).

In an effort to further understand the failure of prediction, comparisons were made between item responses of one of the specialty criterion groups, the pathologists, and those of medical school seniors who later became pathologists. As the scale did not work with the latter group, there have to be some substantial differences between the item responses of the two groups to the items on the Pathologist Scale.

Of the 75 items on the SVIB-MSPB Pathologist Scale, 28 showed large differences (20 per cent or more) between the response rate of the two groups.

Insert Table 7 about here

Those items, separated according to which group showed the greater preference, are listed in Table 7.

Several hypotheses can be generated by scanning those items. Some are clearly reflecting age differences, e.g., "athletic men," "outside versus inside work," "work over written materials versus serve drinks," and responses to those items will likely change slightly as the students grow older.

However, the largest group of items seems to represent a channeling of interests in the direction of the pathologists' daily work. The students, more often than the specialists, indicated preferences for general activities in medicine such as "Giving first-aid," "Surgery," "Radiology," while the specialists more often selected items closely concerned with their daily tasks such as, "Laboratory technician," "Writing reports," "Bacteriology," "Cytology," and "Immunology." Do these differences in preference arise from working in the occupational setting? I suspect so, but only longitudinal research can answer that.

These results suggest, contrary to earlier research on the SVIB, that vocational interests are modified somewhat by membership in the occupation. The general pattern of interests of the 1950 seniors was oriented towards the biological sciences--they scored fairly high on the Physician Scale--but their Likes and Dislikes among medical activities were probably affected by their internships, residencies, and early years of practice. Subtle differences can be found between the preferences of experienced pathologists and, say, surgeons, but it is doubtful that such differences are apparent enough during medical school to permit the development of predictive scales.

There is another consideration in studying medical specialists that

should be mentioned here, though no data will be presented. Measures of interests are more likely related to job function than anything else and the medical specialty titles may not very accurate reflections of different job functions. For example, a man doing basic research in urology may have more interests in common with someone doing basic research in pathology than he does with the average practicing urologist. Research on career patterns of medical physicians by Dr. Edwin B. Hutchins of the Association of American Medical Colleges supports this conjecture. Further research should probably concentrate on job function more than on formal specialty.

MEAN SVIB SCORES FOR SPECIALIST GROUPS

In the course of this project, mean scores on the SVIB scales were calculated for all of the specialist groups tested by Strong and Tucker. They had never calculated these statistics, as they did their work in pre-computer days, though such normative data should be very valuable. In Tables 8 & 9, mean profiles are presented for the following samples:

Strong-Tucker specialist groups (Data collected between 1948-1952 from men in the designated specialties; profiles based on only those with both SVIB and MSPB)

	N
Doctors-in-general (DPS)	214
Internists (INT)	209
Neurological Surgeons (NS)	47
Orthopedic Surgeons (OS)	71
Pathologists (PATH)	154
Pediatricians (PED)	96
Psychiatrists (PSY)	168
Radiologists (RAD)	111
Surgeons (SURG)	188
Urologists (UROL)	84

Strong-Tucker Student Groups (Data collected in 1950 while they were medical school seniors; eventual specialty determined from 1965 AMA directory.)

	N
Academicians (ACA)	79
Anesthetists (ANES)	34
General Surgeons (GS)	69
Internists (INT)	110
Obstetrics and Gynecology (OB)	41
Pathologists (SPA)	27
Pediatricians (SPED)	48
Psychiatrists (SPSY)	49
Radiologists (SRA)	27
Surgical Specialists (SURG SPEC) all surgeons other than general surgeons	38
General Practitioners (GP)	204

Information on the SVIB profile score can be found in the SVIB Manual, with the exception of the A-B scale. This scale, based on the work of Whitehorn and Betz (see Betz, 1962) contains items that discriminate between psychotherapists who have differing rates of success in dealing with schizophrenic patients. The scale is normed so that the Whitehorn and Betz "A-type" doctors--those relatively successful with schizophrenics--score about 60, the "B-type" about 40.

It is difficult to digest the data in Tables 8 & 9, with the means simply listed. To aid in interpretation, Tables 10 through 16 have been prepared. They contain rank-ordered means for the specialist groups on

SVIB scales selected from various portions of the profile.

Insert Tables 10-16 about here

The means range over different portions of the standard score scale and it is very important to be aware of the scale scores on the left-hand side of each of these tables. For example, all of the scores on the Physician Scale fall between standard scores of 40 and 51, indicating substantial similarity of interests between these groups and the criterion group of physicians used to establish this scale. (All criterion groups have means of 50 and standard deviations of 10 on their own scales.) On the Carpenter Scale, the range of means is slightly larger, from 11 to 25, but the scores are much lower on the scale, indicating considerable dissimilarity in measured interests between these groups and carpenters.

Several conclusions can be drawn by looking at the rank-order of the groups on these scales.

1) The groups show some spread on the SVIB scales, not as much as is found among random occupational groups where differences run up to four standard deviations, but enough to conclude there are real differences between the specialties. From past experience, mean differences of five points or more--one half standard deviation--represent noteworthy differences.

2) The differences are usually intuitively reasonable. For example, the psychiatrists scored higher on the Social Worker Scale and lower on the Carpenter Scale than any other group.

3) The psychiatrists seemed to be the most different group; they were more social-service oriented, and also more interested in

cultural esthetic activities, as reflected, for example, by their score on the Librarian Scale.

4) The internists and pathologists appeared most oriented toward scientific-intellectual activities, as indicated by their scores on the Physicist Scale and supported to a lesser degree by their scores on the other professional scales.

5) With a few exceptions, scores of the student samples showed the same relationships as the adult specialist groups. Although the student means on the Physician and Physicist Scales were lower, the rank-order was similar to that among the adult groups. On the other scales, their scores were quite similar. These findings suggest once again that the students resemble the practitioners on the gross interest dimensions, but show less resemblance (in level of mean scores though perhaps not in rank-order) on those scales centrally concerned with their occupation.

CONCLUSION

The re-analysis of these data from the medical profession has made very clear that the Medical Specialist Scales, while perfectly valid among those specialists who have already selected a career, are not accurate predictors of which specialties medical school seniors will enter. The scales should not be used for counseling in that setting.

This research has not been able to generate a definite answer as to why the scales will not predict. The most reasonable explanation--based on fragmentary information--is that the choice of a specialty within the medical profession is a fine discrimination, at least in terms of interest measurement techniques, and these techniques are not adequate to predict

that discrimination in advance. The data also suggest that some of the differences among the specialist groups may appear after some experience in the specialty. Pathologists more often report, compared to students who will become pathologists, that they liked Bacteriology and Cytology while in medical school. Is this a matter of selective reminiscence after some experience, or would the same difference have appeared if the pathologists had also been tested as students? If it is true that experience in a specialty creates more important differences than existed before entry into that specialty, then, of course, any prediction will be difficult--probably impossible.

Perhaps the final conclusion is that while the relationship between measured interests and the selection of a medical specialty is probably lawful, at this point in time, the laws remain elusive.

REFERENCES

Betz, Barbara J. Experiences in research in psychotherapy with schizophrenic patients. In H. H.Strupp and L. Luborsky (Eds.), Research in psychotherapy. Amer. Psychol. Assn., 1962, 2, 41-60.

Campbell, D. P. Manual for the Strong Vocational Interest Blanks for men and women. Stanford: Stanford Univ. Press, 1966.

Campbell, D. P. The stability of vocational interests within occupations over long time spans. Personnel Guid. J., 1966, 44, 1012-1019.

Strong, E. K. Jr., & Tucker, A. C. The use of vocational interest scales in planning a medical career. Psychol. Monogr., 1952, 66, No. 9 (Whole No. 341).

Tucker, A. C., & Strong, E. K. Jr. Ten-year follow-up of vocational interest scores of 1950 medical college seniors. J. App. Psychol., 1962, 46, 81-86.

Table 1

SVIB-MSPB Scale Characteristics

	No. Used for Item Analysis		Minimum Percent Difference Scored	Number of Items		
SCALE	SVIB	MSPB		SVIB	MSPB	TOTAL
Internist	427	389	13	26	37	63
Pathologist	282	228	15	38	37	75
Psychiatrist	369	330	16	46	31	77
Surgeon	423	343	12	18	36	54
Specialization Level	1526	1314	11	24	19	43
(Ors-in-General)	431	461				

Table 2

Validation and Cross-Validation Data for the Medical Specialist Scales

Scale	Norm Group[a] (Raw Scores)			Drs-in-General (Standard Scores)			Percent Overlap
	N	M	S.D.	N	M	S.D.	
Internist	209	19	9.4	214	31	13.1	44
Pathologist	154	21	11.1	214	30	12.3	37
Psychiatrist	168	25	16.3	214	34	11.5	44
Surgeon	188	17	6.9	214	28	13.1	33

Scale	Cross-Validation Norm Group (Standard Scores)			Cross-Validation Drs-in-General (Standard Scores)			Cross-Validation Percent Overlap
	N	M	S.D.	N	M	S.D.	
Internist	80	49	9.9	102	33	13.1	49
Pathologist	25	46	10.4	102	32	12.4	55
Psychiatrist	35	49	8.7	102	32	11.3	40
Surgeon	57	47	9.8	102	31	13.4	48

a = Raw Scores (Criterion groups have standard score mean of 50 and S.D. of 10 on their own scale.)

Table 3

Validation and Cross-Validation Results for Specialization Level Scale

Sample		Standard Scores on Specialization Level Scale				
		N	Mean	S.D.	Overlap With Validation DRS-IN-GENERAL	Overlap With Cross-Validation DRS-IN-GENERAL
Internist	Validation	209	51	9.6	60	
Internist	Cross-Validation	80	50	8.5		55
Pathologist	Validation	154	51	9.6	63	
Pathologist	Cross-Validation	25	50	10.4		67
Psychiatrist	Validation	168	52	10.3	58	
Psychiatrist	Cross-Validation	35	51	9.2		63
Surgeon	Validation	188	46	8.6	77	
Surgeon	Cross-Validation	57	46	10.1		83
DRS-IN-GENERAL	Validation	214	40	11.1		
DRS-IN-GENERAL	Cross-Validation	102	41	11.2		

Table 4

Scores for all Specialist Groups on all Specialist Scales

	VALIDATION GROUPS								CROSS-VALIDATION GROUPS							
	Internist		Pathologist		Psychiatrist		Surgeon		Internist		Pathologist		Psychiatrist		Surgeon	
Scale	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Internist	50	10.0	43	10.6	44	10.4	32	9.7	49	9.9	41	11.6	43	9.3	34	10.4
Pathologist	41	11.6	50	10.0	38	10.9	32	10.3	40	10.8	46	10.4	36	11.2	32	11.7
Psychiatrist	40	9.6	36	11.0	50	10.0	32	9.2	41	8.8	37	10.2	49	8.7	33	11.0
Surgeon	28	11.9	32	11.3	27	12.2	50	10.0	28	10.6	37	10.1	28	9.9	47	9.9

Table 5

SVIB-MSPB Returns from Medical School Seniors

Name of School	No. of Sets Mailed to School	No. of Sets Returned
University of Buffalo	64	45
Chicago Medical School	63	62
University of Colorado	56	45
Cornell University	87	60
Medical College of Georgia	73	32
State University of Iowa	87	70
Jefferson Medical College	161	121
Johns Hopkins University	80	52
University of Michigan	114	93
University of Oklahoma	65	59
University of Rochester	67	56
University of Texas (Southwestern)	66	62
Vanderbilt University	53	37
Yale University	59	22
	1095	816

Useable Forms 781 (71%)

Table 6

Predictive Validity Data for the SVIB-MSPB Scales

SPECIALTIES	N	Relevant SVIB Scales M.D.	Spec.	AACH	Psychiatrist	Medical Specialists Scales Intern	Path.	Psychia.	Surg.	Spec.
Anesthetists	34	45	41	61	43	41	37	41	31	48
General Practitioners	204	45	39	52	35	28	23	34	28	37
General Surgeons	69	44	42	54	38	31	26	36	35	41
Internal Medicine	110	44	47	59	43	40	31	42	27	45
Obstetrics and Gynecology	41	41	42	54	35	30	24	37	31	39
Pathologists	27	46	42	56	39	37	33	34	30	44
Pediatricians	48	46	43	57	40	38	29	41	23	43
Academicians[1]	79	46	48	61	43	41	37	41	31	48
Psychiatrists	49	40	48	59	45	43	32	47	25	48
Radiologists	27	43	44	57	38	36	32	35	28	43
Surgical Specialists[2]	38	44	43	55	36	30	25	36	35	40
TOTAL GROUP	781	44	43	55	39	34	28	38	28	41

[1] Anyone listing major activities as medical faculty.

[2] All surgical specialties other than "General Surgery."

Table 7

Items from the SVIB-MSPB Pathologist Scale

Showing Large ($\geq$ 20) Percent Differences

	MORE POPULAR AMONG THE CRITERION GROUP	MORE POPULAR AMONG THE STUDENTS
SVIB Items	10 Author of technical book	93 Surgeon
	49 Laboratory Technician	192 Give first-aid assistance
	53 Librarian	280 Athletic Men
	215 Writing reports	296 Opportunity to consult about problems
	223 Methodical Work	317 Chairman, Entertainment Committee
	331 Deal with things rather than people	342 Outside versus inside work
	378 Can write a concise, well-organized report	
	382 (Can) Put drive into the organization	
	383 (Can) Stimulate ambition of associates	
MSPB Items	17 Refer many vs few patients to specialists	76 Anestnesia
	27 Favor heavy spending on equipment vs books	84 Diagnostic Radiology
	78 Bacteriology	96 Normal Roengenology
	82 Cytology	98 Operative Animal Surgery
	90 Histology	
	91 Immunology	
	108 Tropical Medicine	
	141 Check over written materials versus serve drinks	
	146 Observe paintings versus M.C. radio program	

Table 8

SVIB Scale Means for Medical Specialist Samples

		DRS	INT	NS	OS	PATH	PED	PSY	RAD	SURG	UROL
I	Dentist	40	36	38	37	39	35	30	39	40	40
	Osteopath	44	41	42	43	39	40	37	42	45	45
	Veterinarian	32	25	46	30	27	26	22	31	31	32
	Physician	50	49	51	46	49	47	44	45	50	48
	Psychiatrist	40	46	41	36	44	44	51	37	41	36
	Psychologist	34	42	38	32	43	40	46	34	36	33
	Biologist	32	44	43	37	49	41	41	39	41	39
II	Architect	32	32	34	32	37	29	28	31	33	31
	Mathematician	26	32	29	23	36	28	29	26	28	25
	Physicist	26	30	29	24	35	26	25	27	28	26
	Chemist	35	39	40	37	44	35	33	37	39	37
	Engineer	31	31	33	32	37	28	27	33	33	33
III	Production Mgr.	28	26	30	32	29	26	26	31	30	31
	Army Officer	20	19	28	33	20	22	21	27	24	26
	Air Force Officer	26	25	32	35	27	28	27	31	28	30
IV	Carpenter	21	16	20	25	22	17	12	25	21	23
	Forest Service Man	20	15	18	24	18	16	13	22	20	23
	Farmer	33	28	30	34	33	29	24	35	33	34
	Math–Science Teacher	30	29	30	34	33	32	28	34	29	33
	Printer	25	22	22	27	24	25	19	29	23	28
	Policeman	19	15	18	21	15	15	14	19	18	21
V	Personnel Director	22	24	22	23	21	23	30	21	22	22
	Public Administrator	30	33	35	33	33	35	40	30	32	32
	Rehabilitation Counselor	28	31	29	26	27	32	38	26	27	27
	YMCA Secretary	18	17	17	20	12	19	22	17	18	18
	Social Worker	25	30	27	25	24	32	38	24	25	24
	Social Science Teacher	24	23	19	20	20	26	26	22	21	21
	School Superintendent	22	26	24	20	23	27	30	20	22	20
	Minister	20	24	24	19	20	26	28	18	20	19
VI	Librarian	28	34	32	26	33	34	36	27	27	26
	Artist	33	34	32	30	36	30	30	31	34	31
	Musician Performer	35	37	36	36	37	38	37	35	36	33
	Music Teacher	25	27	36	24	36	28	30	23	25	22
VII	CPA Owner	25	27	24	19	27	25	26	23	24	22
VIII	Senior CPA	18	17	18	21	17	18	14	21	16	20
	Accountant	16	13	15	15	16	16	13	19	14	18
	Office Worker	20	15	16	19	16	18	14	22	17	22
	Purchasing Agent	25	22	21	23	23	21	19	26	24	26
	Banker	21	18	17	18	18	19	16	23	18	21
	Pharmacist	32	26	24	25	27	24	24	30	28	31
	Mortician	29	24	23	26	22	24	23	28	27	28
IX	Sales Manager	22	20	19	20	18	19	20	21	21	22
	Real Estate Salesman	30	27	24	26	25	26	28	28	28	28
	Life Insurance Salesman	26	24	21	21	19	23	24	23	23	23
X	Advertising Man	28	29	27	23	27	26	29	25	28	29
	Lawyer	35	37	33	29	35	34	37	31	34	32
	Author–Journalist	33	35	32	28	35	32	35	30	33	30
XI	Pres., Mfg. Concern	24	23	24	23	24	21	22	25	25	25
	Credit Manager	23	21	22	25	17	24	25	25	21	25
	Chamber of Comm. Exec.	26	26	28	29	22	28	31	36	27	26
	Physical Therapist	36	32	37	39	33	37	35	37	36	38
	Computer Programmer	27	30	33	34	33	32	32	33	29	30
	Business Educ. Teacher	22	19	19	22	18	24	23	23	20	23
	OL	61	62	61	59	61	61	63	59	61	59
	SL	40	49	49	45	50	42	53	42	45	41
	MF	47	46	47	52	47	45	45	50	49	50
	OIE	50	50	48	47	53	49	44	51	50	50
	AACH	56	60	59	52	61	59	60	54	56	54
	AB	44	46	48	38	46	43	48	40	43	40

Table 9

SVIB Scale Means for Medical Specialist Samples From 1951 classes

		ACA	ANES	GS	INT	OB	SPA	SPED	SPSY	SRA	SURG. SPEC.	GP
I	Dentist	33	34	33	32	31	39	33	29	36	33	36
	Osteopath	38	41	40	38	39	41	38	35	39	39	43
	Veterinarian	25	29	31	24	30	33	27	20	29	29	34
	Physician	46	45	44	44	41	46	46	40	43	44	45
	Psychiatrist	43	40	38	43	35	38	40	45	38	36	35
	Psychologist	39	33	29	36	28	33	34	41	34	29	28
	Biologist	41	34	31	35	28	40	36	36	37	32	34
II	Architect	28	23	23	24	21	30	25	27	27	26	26
	Mathematician	27	20	18	22	16	26	23	25	25	20	19
	Physicist	26	20	19	20	15	28	21	21	23	18	21
	Chemist	35	31	31	30	27	38	29	29	34	29	31
	Engineer	28	25	26	23	22	31	23	23	27	25	27
III	Production Mgr.	26	28	31	25	28	30	23	22	28	26	29
	Army Officer	25	27	32	25	29	26	22	24	25	30	28
	Air Force Officer	32	34	37	31	34	32	29	30	33	34	33
IV	Carpenter	16	17	19	14	17	22	16	12	20	17	23
	Forest Service Man	16	21	23	17	18	25	19	16	20	18	26
	Farmer	27	29	31	26	28	35	29	24	30	28	33
	Math-Science Teacher	33	36	34	32	34	37	32	29	34	30	35
	Printer	24	25	25	24	24	28	24	21	28	24	28
	Policeman	16	21	19	16	18	21	16	12	19	19	22
V	Personnel Director	24	24	25	26	25	17	24	28	20	25	21
	Public Administrator	35	34	35	35	34	30	32	38	32	33	31
	Rehabilitation Counselor	34	33	33	36	34	27	36	37	30	32	30
	YMCA Secretary	25	29	30	29	32	22	31	28	23	30	27
	Social Worker	33	32	30	36	32	25	35	41	28	32	27
	Social Science Teacher	24	26	25	27	29	22	29	28	25	26	25
	School Superintendent	23	21	19	24	22	16	24	26	20	20	18
	Minister	25	21	20	27	22	16	29	31	19	23	19
VI	Librarian	33	27	24	33	27	27	32	38	29	29	25
	Artist	30	27	26	28	24	31	30	31	29	28	28
	Musician Performer	37	35	34	39	36	36	40	41	35	37	35
	Music Teacher	28	25	24	30	28	23	31	34	23	30	24
VII	CPA Owner	25	24	22	25	24	20	24	25	26	24	21
VIII	Senior CPA	21	23	25	21	23	23	18	18	24	23	22
	Accountant	16	18	18	15	18	15	13	14	19	17	17
	Office Worker	17	22	22	19	24	17	17	15	21	21	22
	Purchasing Agent	19	23	24	20	24	23	19	16	23	22	24
	Banker	15	18	18	16	19	17	16	15	20	18	20
	Pharmacist	27	32	31	28	31	30	28	23	30	28	32
	Mortician	23	27	27	24	29	24	26	22	25	29	28
IX	Sales Manager	19	22	23	21	25	19	20	20	20	24	21
	Real Estate Salesman	27	30	30	28	31	28	30	28	28	31	30
	Life Insurance Salesman	23	25	25	25	29	22	27	25	24	28	25
X	Advertising Man	27	24	24	27	26	25	27	30	26	29	24
	Lawyer	33	30	28	32	29	30	33	35	30	32	29
	Author–Journalist	32	26	25	31	27	31	32	34	30	31	28
XI	Pres., Mfg. Concern	19	19	22	18	20	19	17	19	20	21	20
	Credit Manager	25	29	31	28	34	23	26	27	27	31	28
	Chamber of Comm. Exec.	31	32	34	33	36	26	33	34	29	35	30
	Physical Therapist	40	44	46	42	45	41	42	37	39	44	44
	Computer Programmer	37	34	35	33	31	35	30	33	36	32	32
	Business Educ. Teacher	23	28	29	27	31	22	25	26	25	27	27
	OL	60	58	58	59	58	56	59	61	58	59	56
	SL	48	41	42	47	42	42	43	48	44	43	39
	MF	46	47	51	45	47	50	44	41	48	45	43
	OIE	45	44	42	42	40	50	42	43	47	41	46
	AACH	61	56	54	59	54	56	57	59	57	55	52
	AB	50	47	45	49	47	45	50	55	45	50	44

Table 10

Scores on the SVIB PHYSICIAN Scale for 9 Specialist Groups,

10 Student Groups, and DOCTORS-IN-GENERAL

	Practitioners	Student Groups
51	Neurological Surgeons	
50	DOCTORS-IN-GENERAL Surgeons	
49	Internists Pathologists	
48	Urologists	
47	Pediatricians	
46	Orthopedic Surgeons	Pathologists Pediatricians Academicians
45	Radiologists	Anesthetists General Practitioners
44	Psychiatrists	Surgeons Internists Surgical Specialists
43		Radiologists
42		
41		Obstetricians
40		Psychiatrists

Table 11

Physicist Scale

35	Pathologists			
34				
33				
32				
31				
30	Internists			
29	Neurological Surgeons			
28	Radiologists	Surgeons		Pathologists
27				
26	Pediatricians	DOCTORS-IN-GENERAL	Urologists	Academicians
25	Psychiatrists			
24	Orthopedic Surgeon			
24				
22				
21				Gen. Practitioners
20				Pediatricians Psychiatrists Anesthetists Internists
19				Surgeons
18				Surgical Specialists
17				
16				
15				Obstetricians

Table 12

Carpenter Scale

25	Orthopedic Surgeons Radiologists	
24		
23	Urologists	General Practitioners
22	Pathologists	
21	Surgeon DOCTORS-IN-GENERAL	
20	Neurological Surgeons	Radiologists
19		Surgeons
18		
17	Pediatricians	Anesthetists Obstetricians
16	Internists	Surgical Specialists Pediatricians Academicians
15		
14		Internists
13		
12		Psychiatrists
11	Psychiatrists	
10		

Table 13

Social Worker Scale

41		Psychiatrists
40		
39		
38	Psychiatrists	
37		
36		Internists
35		Pediatricians
34		
33		Academicians
32	Pediatricians	Anesthetists Obstetricians Surgical Specialists
31		
30	Internists	
29		
28		Radiologists
27	Neurological Surgeons	General Practitioners
26		
25	Orthopedic Surgeons Surgeons DOCTORS-IN-GENERAL	Pathologists
24	Pathologists Radiologists Urologists	
23		
22		
21		
20		
19		
18		

Table 14

Librarian Scale

38		Psychiatrists
37		
36	Psychiatrists	
35		
34	Internists Pediatricians	
33	Pathologists	Internists Academicians
32	Neurological Surgeons	Pediatricians
31		
30		
29		Radiologists Surgical Specialists
28	DOCTORS-IN-GENERAL	
27	Radiologists Surgeons	Anesthetists Obstetricians Pathologists
26	Orthopedic Surgeons Urologists	
25		General Practitioners
24		Surgeons

Table 15

Purchasing Agent Scale

28		
27		
26	Radiologists Urologists	
25	DOCTORS-IN-GENERAL	
24	Surgeons	Surgeons General Practitioners Obstetricians
23	Orthopedic Surgeons Pathologists	Anesthetists Pathologists Radiologists
22	Internists	Surgical Specialists
21	Pediatricians Neurological Surgeons	
20		Internists
19	Psychiatrists	Pediatricians Academicians
18		
17		
16		Psychiatrists
15		

Table 16

Lawyer Scale

39		
38		
37	Internists Psychiatrists	
36		
35	Pathologists DOCTORS-IN-GENERAL	Psychiatrists
34	Surgeons Pediatricians	
33	Neurological Surgeons	Pediatricians Academicians
32	Urologists	Internists Surgical Specialists
31	Radiologists	
30		Anesthetists Pathologists Radiologists
29	Orthopedic Surgeons	General Practitioners Obstetricians
28		Surgeons
27		
26		
25		